



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/798,001

03/11/2004

Hideshi Hattori

CU-3633

6288

26530 7590 05/11/2010  
LADAS & PARRY LLP  
224 SOUTH MICHIGAN AVENUE  
SUITE 1600  
CHICAGO, IL 60604

EXAMINER

JUNG, UNSU

ART UNIT

PAPER NUMBER

1641

MAIL DATE

DELIVERY MODE

05/11/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/798,001	<b>Applicant(s)</b> HATTORI, HIDESHI	
	<b>Examiner</b> UNSU JUNG	<b>Art Unit</b> 1641	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-39 is/are pending in the application.
- 4a) Of the above claim(s) 22-25,27,29,31,33,35,37 and 38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26,28,30,32,34,36 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on February 24, 2010 has been entered. The submission included amendments to claim 26 and addition of new claim 39.

### ***Status of Claims***

2. Claims 22-39 are pending, claims 22-25, 27, 29, 31, 33, 35, 37, and 38 have been withdrawn from consideration, and claims 26, 28, 30, 32, 34, 36, and 39 are currently under consideration for patentability under 37 CFR 1.104.

### ***Rejections Withdrawn***

3. The following prior art rejections have been withdrawn in view of amended independent claim 26 in the reply filed on February 24, 2010:

- Rejection of claims 26, 28, 30, and 36 under 35 U.S.C. 102(b) as being anticipated by Glazier (WO 00/61282, Oct. 19, 2000) and as evidenced by Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991);

Art Unit: 1641

- Rejection of claim 32 under 35 U.S.C. 102(b) as being anticipated by Glazier (WO 00/61282, Oct. 19, 2000) and as evidenced by Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991) and further evidenced by Taylor (U.S. Patent No. 2,713,286, July 19, 1955); and
- Rejection of claim 34 under 35 U.S.C. 103(a) as being unpatentable over Glazier (WO 00/61282, Oct. 19, 2000) and as evidenced by Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991) and further in view of Noblett (U.S. Patent No. 6,362,004 B1, Mar. 26, 2002).

### ***New Grounds of Rejections***

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 26, 28, 30, 36, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glazier (WO 00/61282, Oct. 19, 2000) in view of Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991) and Goldberg et al. (U.S. Patent No. 6,307,042 B1, Oct. 23, 2001) (hereinafter "Goldberg").

Glazier teaches a bio-microarray (see entire document, particularly, pp2-3 and p8, lines 19-23) comprising:

- a substrate (support region, pp2-3 and p8, lines 19-23):
- anti-reflection layer (porous region comprising colloidal silica particles, p3) is formed on the surface of the substrate, the anti-reflection layer has a fine uneven structure comprising a fine particle of diameter in a range of 7-100 nm (p3, lines 21-22); and
- an immobilization layer (linker molecules, p26, line 17-27, line 28) for immobilizing a probe molecule is formed in a pattern on the anti-reflection layer.

With respect to the limitation of "the anti-reflection layer is formed only in a region in which the immobilization layer is formed", Glazier teaches that a porous region, which reads on the anti-reflection layer of the claimed invention, can be specifically deposited into spots or patterned surfaces (p10, lines 1-6) and an immobilization layer (linker molecules, p26, line 17-27, line 28) for immobilizing a probe molecule is formed in a pattern on the porous region. Therefore, the porous region of Glazier is only formed in a region in which the immobilization layer is formed.

With respect to claims 28 and 30, Glazier teaches that the anti-reflection layer has a fine uneven/porous structure (porous layer) with a depth in a range of 10 nm to 70  $\mu\text{m}$  (p3, lines 1-4).

With respect to claim 36, Glazier teaches a bio-microarray, comprising the substrate as set forth above and a biomolecule immobilized on the substrate (p13, line 21-p14, line 14).

With respect to the limitation of “the anti-reflection layer,” although Glazer is silent on disclose the anti-reflection properties of colloidal silica particles, the porous region of Glazer comprising colloidal silica particles (p3) would inherently possess anti-reflection property since it is well known in the art as taught by Patel that the colloidal silica has anti-reflection properties (see entire document, particularly column 2, lines 9-10).

However, Glazer in view of Patel fails to teach a back side anti-reflection/light-absorbing layer formed on the other surface of the substrate.

Goldberg teaches methods of forming polymer arrays by providing a substrate having a first surface coated with functional groups protected with a photolabile protecting group, and a second surface having a layer that includes one or more of an index matching compound, a light absorbing compound and an antireflective compound (see entire document, particularly column 2, lines 16-28). The method then provides for the sequential activation and coupling of monomers in different selected regions of the first surface of the substrate to form a plurality of different polymer sequences in different known locations on the surface of the substrate, by directing an activation radiation at the first surface of the substrate (column 2, lines 16-28). The light

Art Unit: 1641

absorbing layer at the bottom of the substrate prevents impinging light from being scattered or reflected during imaging by detection systems (column 29, lines 42-48).

This feature improves the signal-to-noise ratio of such systems by significantly reducing the potential of imaging of undesired reflected light (column 29, lines 42-48).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to employ a back side anti-reflection/light-absorbing layer of Goldberg in the substrate of Glazer in view of Patel in order to prevent impinging light from being scattered or reflected during imaging by detection systems. The advantage of improving the signal-to-noise ratio of detection systems by significantly reducing the potential of imaging of undesired reflected light provides the motivation to combine teachings of Glazer in view of Patel and Goldberg with a reasonable expectation of success.

With respect to claim 39, as discussed in MPEP § 2144, if the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court. Examples directed to various common practices which the court has held normally require only ordinary skill in the art absent a demonstration of criticality of a specific limitation. Glazer in view of Patel and Goldberg discloses the claimed invention except for the back side anti-reflection/light-absorbing layer is formed in a pattern only in a region in which the immobilization layer is formed. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to employ change shapes of the anti-reflection/light-absorbing layer as currently recited in claim 39, since it has been held that changing shapes of an

invention involves only routine skill in the art. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

7. Claim 32 is rejected under 35 U.S.C. 102(b) as being anticipated by Glazier (WO 00/61282, Oct. 19, 2000) in view of Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991) and Goldberg (U.S. Patent No. 6,307,042 B1, Oct. 23, 2001) as applied to claim 26 above, and further in view of Taylor (U.S. Patent No. 2,713,286, July 19, 1955).

Glazier in view of Patel and Goldberg teaches a bio-microarray as set forth above. With respect to the limitation of “a bulk refractive index of the fine particle is smaller than that of the substrate,” Glazier further teaches that the substrate can be selected from variety of materials including plastic (p8, lines 19-20). Although Glazier does not specifically disclose that the bulk refractive index of silica particles is smaller than the plastic substrate, Glazier discloses that the substrate (support layer) can be similar or different materials than the materials of the porous region and can specifically include all types of glass materials, plastics, polymers, fused silica and other rigid and semi-rigid materials. As Glazier teaches that the support layer can comprise fused silica and the porous region (anti-reflection layer) can also include colloidal silica particles, porous layer (anti-reflection layer) of silica particles would inherently have a bulk refractive index is smaller than that of the support layer (substrate) since Taylor teaches



that substantial reduction of bulk refractive index of a layer is obtained because of the presence of air within the porous structure (column 3, lines 17-34).

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glazier (WO 00/61282, Oct. 19, 2000) in view of Patel (U.S. Patent No. 4,994,318, Feb. 19, 1991) and Goldberg (U.S. Patent No. 6,307,042 B1, Oct. 23, 2001) as applied to claim 26 above, and further in view of Noblett (U.S. Patent No. 6,362,004 B1, Mar. 26, 2002).

Glazier in view of Patel and Goldberg teaches a bio-microarray as set forth above. However, Glazier in view of Patel and Goldberg fails to teach a mark formed on the substrate for positional detection.

Noblett reference teaches fiducial marks located on predetermined locations with respect to a microarray sample, in order to position and align the sample with greater precision for detection purposes (see entire document, particularly abstract and column 3, lines 24-35).

It would have been *prima facie* obvious to one of ordinary skill in the art to modify the apparatus of Glazier as evidenced by Patel with fiducial marks located on predetermined locations with respect to the probe array, as taught by Noblett, in order to position and align a sample with greater precision for detection purposes. The advantage of more accurate detection, as taught by Noblett, provides the motivation to combine teachings of Noblett with Glazier in view of Patel and Goldberg. In addition, one of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including the fiducial marks, as taught by Noblett, in the

Art Unit: 1641

apparatus of Glazier in view of Patel and Goldberg, since Glazier teaches an array of predefined or known regions of polymers (see Glazier, p13, lines 27-28), and the fiducial marks of Noblett provides a means to correctly locate the immobilized polymers.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 26, 28, 30, 32, 34, 36, and 39 have been considered but are moot in view of the new ground(s) of rejection.

Since the prior art fulfills all the limitations currently recited in the claims, the invention as currently recited would read upon the prior art.

### ***Conclusion***

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to UNSU JUNG whose telephone number is (571)272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1641

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Unsu Jung/  
Unsu Jung  
Primary Examiner  
Art Unit 1641